

REMARKS

Claims 1-7 and 9 are presently pending in the application.

Claim 1 has been amended to recite that the method produces a silylated crystalline titanosilicate catalyst having a MWW structure, which is supported in the specification at least in Example 1. Claim 8, which was a duplicate of claim 7, has been canceled. Finally, claim 9 has been added, which is identical to claim 4 but depends from claim 2 rather than from claim 1. No new matter has been added by these amendments, and entry is respectfully requested.

In the present Office Action, the Examiner has rejected claims 1-8 under U.S.C. § 102(b) as being anticipated by WO 01/34298 ("WO '298"). The Examiner argues that WO '298 discloses a process for preparing an oxide containing Si and Ti in which the oxide material is contacted with at least one silane or silane derivative. Suitable silanes allegedly include trimethylchlorosilane, and suitable oxide materials allegedly include MWW zeolite and MCM-22. The Examiner argues that while intended use limitations, such as those recited in claims 3-8, cannot be entirely disregarded, the intended use must result in a structural difference between the claimed invention and the prior art in order to provide a patentable distinction. The Examiner takes the position that the prior art structure is capable of performing the intended use, and thus concludes that WO '298 anticipates the present claims. Applicants respectfully traverse this rejection as follows.

The present invention is directed to a method which involves preparing a silylated crystalline titanosilicate catalyst having a MWW structure by silylating a crystalline titanosilicate catalyst. The resulting silylated catalyst exhibits improved catalytic activity and can be used for epoxidation reactions, for reactions which utilize nitrile compounds as solvent, etc.

U.S. Patent No. 6,740,764 of Chen et al. ("Chen") is the U.S. counterpart to WO '298 and will be used for discussion since it is in English. Chen describes oxides containing Si and Ti, noncrystalline silicon dioxide, and at least one crystalline silicate phase with a zeolite structure. In contrast with the claimed silylated titanosilicate catalyst, the oxide of Chen contains no silicon-carbon bonds (see col. 1, line 59) as a result of a calcination step performed after reaction with silane. In col. 11, line 62 to col. 12, line 4, Chen teaches that the silylated oxides are calcined at 200°C to 750° C so that "it is ensured that there are no longer any silicon-carbon bonds in the oxide resulting after the calcination." Accordingly, the final material of Chen

contains no silicon-carbon bonds, and is not a silylated titanasilicate catalyst as claimed. Therefore, Chen does not teach or suggest all of the claimed elements, and thus does not anticipate the present claims. Accordingly, reconsideration and withdrawal of the § 102(b) rejection are respectfully requested.

In fact, Chen teaches away from eliminating this calcination step to remove all silicon-carbon bonds by teaching that it must be “ensured that there are no longer silicon-carbon bonds.” (col. 12, lines 2-3, emphasis added). Accordingly, the present method, which results in a silylated titanasilicate catalyst (containing silicon-carbon bonds), and does not involve a calcining step, would not have been obvious based on Chen, and a § 103 rejection based on WO ‘298 or Chen would not be appropriate.

In Example 4, Chen compares the activities of the catalysts prepared in Example 2 (unmodified) and Example 3 (modified by reaction with aminopropyltriethoxysilane and calcined according to the method of Chen). It can be seen from the data in Table 1 of Chen that a notable change in selectivity of the catalyst was not observed, and that the production activity of propylene oxide remained almost unchanged before and after modification of the catalyst. Therefore, these data do not even provide a motivation to perform the silylation and subsequent calcination as described by Chen.

In contrast, the Examples of the present application demonstrate that the claimed silylated catalyst exhibited superior activity (measured by propylene oxide formation activity per catalyst weight) relative to the non-silylated catalysts prepared in the Comparative Examples. Specifically, the silylated catalyst in Example 1 produced $0.510 \text{ molh}^{-1}\text{g}^{-1}$ propylene oxide activity per catalyst weight, compared with only $0.463 \text{ molh}^{-1}\text{g}^{-1}$ for the unsilylated comparative catalyst prepared in Comparative Example 1. Similarly, the inventive catalyst prepared in Example 2 produced $0.363 \text{ molh}^{-1}\text{g}^{-1}$, compared with only $0.230 \text{ molh}^{-1}\text{g}^{-1}$ for the comparative catalyst prepared in Comparative Example 2, which also exhibited inferior selectivity. Since Chen teaches away from the present invention by requiring a calcination step, these results would not have been obvious based on Chen.

In view of the preceding Amendments and Remarks, it is respectfully submitted that the pending claims are patentably distinct over the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

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Respectfully submitted,
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(Date)


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